HS-64 Site Activity Report - Rev. 0	Report Number: ARPT-WTP-2011-002

Site: DOE Hanford Waste Treatment Plant	**Subject:** Office of Independent Oversight's Office of Environment, Safety and Health Evaluations Activity Report for the Hanford Waste Treatment Plant Construction Quality Review

Dates of Activity	02/14/2011 – 02/17/2011	**Report Preparer**	Joseph Lenahan

Activity Description/Purpose:
The purpose of the visit was to perform a review of construction quality assurance at the Waste Treatment Plant (WTP) site activities concurrently with the Department of Energy (DOE) WTP staff. One focus area for this visit was piping and pipe support installations.

The Office of Health, Safety and Security (HSS) attended several Bechtel National Incorporated (BNI) project meetings, reviewed the WTP project quality assurance program, reviewed DOE-WTP inspection reports completed by the DOE-WTP staff in December 2010 and January 2011, and toured the site with DOE-WTP site inspectors several times to observe ongoing work activities.

HSS witnessed portions of two concrete wall placements, one in the Pretreatment Facility (PTF) and one in the High Level Waste (HLW) facility. HSS observed testing of the freshly mixed concrete, placement and consolidation of concrete in the forms, provisions for protection of the concrete from cold weather, and records documenting results of testing performed on the concrete, pre-placement inspections, and qualifications of concrete testing personnel.

HSS reviewed drawings, specifications, and procedures that control installation of piping and pipe supports. BNI quality control personnel inspect 100 percent of all quality related pipe welds and pipe supports. In addition, all pipe welds in areas which will be inaccessible after startup of operation (areas designated as "black cells" and "dark cells") are radiographed to validate weld quality. The DOE-WTP inspectors practice is to review all records for quality related piping welds. DOE-WTP inspectors physically inspect some aspect (e.g., weld prep and fit-up, final visual, or review of radiographs) for approximately 5 percent of all quality related piping welds and pipe supports. HSS observed BNI direct hire pipe welding and BNI pipe support inspection activities.

HSS reviewed nonconformance reports (NCRs) issued by BNI from October 1, 2010 through February 15, 2011, used to document and disposition nonconforming items. Approximately half of the NCRs were issued to resolve equipment and hardware procurement problems, such as the lack of documentation required to demonstrate compliance with engineering purchase specification requirements or hardware and/or equipment delivered that failed to comply with WTP project specification requirements. NCRs were evaluated by BNI engineering personnel, who developed appropriate actions necessary to correct the nonconforming conditions.

HSS conducted additional review of the status of corrective actions to resolve a previously identified issue for tensioning of structural bolts. The structural steel bolts used on the project are for the most part twist-off type tension control bolts with splined ends that are severed during tensioning by the tool used by the installation crews. Proper bolt tension is achieved when the splined end is severed from the bolt. During a site visit in November 2010, HSS examined corrective actions for NCR number 24590-WTP-NCR-CON-10-0105, which was issued to disposition six structural steel bolts discovered in the HLW on April 13, 2010, that which were not properly tensioned. These six bolts still had the splined ends in place. During a field inspection in November 2010 to determine the effectiveness of BNI corrective actions to resolve the above problem, HSS and DOE-WTP jointly identified two permanent bolts in one connection in the PTF that had not been tensioned (i.e., the splined ends were not severed). BNI issued NCR numbered 24590-WTP-NCR-CON-10-0359 to document and disposition the deficient PTF bolts. DOE-WTP issued a finding for this deficiency and other identified bolting deficiencies. As part of the corrective actions, BNI is inspecting all accessible bolts in slip critical connections in the HLW and PTF to verify the bolts were properly tensioned. There were 28 slip critical connections in the HLW that were inspected and found to be acceptable. In the PTF, there are more than 5000 slip critical connections. Inspection of the PTF slip critical connections was ongoing during the HSS site visit. Six additional bolts were identified in the PTF that were not properly tensioned (splined ends still in place). These six bolts had been installed prior to April 13, 2010; NCR numbered 24590-WTP-NCR-CON-11-0043 was issued to document and disposition these improperly tensioned bolts.

Result:
The review found that concrete construction quality was adequate based on the observed concrete wall placements activities. Drawings, specifications, and procedures which control installation of piping and pipe supports are adequate. The BNI and DOE-WTP inspection program for piping and pipe supports is adequate.

The review of a sample of procurement NCRs found that BNI engineering had developed appropriate corrective actions to disposition these nonconforming conditions.

The review of the NCR corrective actions addressing previously identified problems with the proper tensioning of structural steel bolts was found to be progressing satisfactorily.

HSS Participants	**References**
1. Joseph Lenahan	

Were there any items for HSS follow up? ☒Yes ☐No

HSS Follow Up Items

1. Conduct further review of the status of corrective actions to resolve the NCRs on structural bolt tensioning.
2. Conduct further review of procurement NCRs.
3. Perform additional review of piping and pipe support installation.